

TABLE 6-1
PARAMETERS FOR WATER ANALYSIS

Aromatic Volatiles

Polynuclear Aromatic Hydrocarbons

Total Petroleum Hydrocarbons

Lead

Aluminum

Arsenic

Cadmium

Chromium

Iron

Selenium

Zinc

the laboratory. The composites will be analyzed for the parameters presented in Table 6-2.

6.1.3 Soil Investigation

Soil and groundwater, if present, under the wastewater settling basins will be sampled and analyzed to determine if a release of PCOCS from the settling basins has occurred. One boring or test pit per settling basin will be placed adjacent to stained soil, if present, or on the downstream side of the containment structure. Subject to these limitations, each boring or test pit will be conducted as close to the settling basins as safety and operating constraints will allow.

6.1.3.1 Soil/Groundwater Sampling and Analysis

Non-dedicated split-spoon samplers (for borings) or stainless steel trowels (for test pits) will be employed to collect a series of soil samples at depths of 6", 12", 18" and 24" below the selected sampling locations. The borings or test pits will be logged by a geologist. In the description of soil samples, color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, moisture, and characteristic features such as mineral/rock constituents, texture, fabric, and bedding. Soil samples will be collected in 8-ounce glass jars, and cooled to 4 °C until analyzed. The collected samples will be analyzed for the parameters listed in Table 6-2. For each sampling location the samples collected at depths of 6" and 12" will be analyzed first. If these samples do not show levels of concern, as determined by risk analysis, then the samples collected at depths of 18" and 24" will not be analyzed.

If standing water is present in the boring or test pit, a water sample will be collected in addition to the soil samples to determine if there has been a release of PCOCs. Water samples will be collected, placed in 8-ounce plastic jars, acidified to a pH < 2, and cooled to 4°C until analyzed. Water samples will be analyzed for the parameters listed in Table 6-1.

TABLE 6-2
PARAMETERS FOR SOLIDS ANALYSIS

EP Toxicity (metals)^(a)
Aromatic Volatiles
Polynuclear Aromatic Hydrocarbons
Total Petroleum Hydrocarbons
Lead
Aluminum
Arsenic
Cadmium
Chromium
Iron
Selenium
Zinc

Note:

- (a) EP Toxicity testing will be performed only for those parameters whose total concentration is in excess of the EP Toxic characteristic value.

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6.1.4 Air Investigation

If potentially volatile compounds are detected at elevated concentrations in SWMUs 1 through 3, it will be necessary to determine if any of these compounds are volatilizing at elevated concentrations. This will be accomplished by taking general air measurements using detection tubes (e.g. Drager) appropriate for polynuclear aromatic hydrocarbons and volatile organic compounds found at the site. Measurements will be taken at several locations around the units. If OSHA air limits applicable to employees stationed at the units are not exceeded, it can be assumed that off-site public health and environment will not be significantly impacted.

6.1.5 Conclusions

For each SWMU, the results of the investigation will be evaluated to determine if any further study will be necessary.

No further investigation will be necessary if the following is true:

- The concentrations of identified PCOCs in the wastewater and sludges in the SWMU are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

If the above is not true, then no further investigation will be necessary if all the following are true:

- Historical investigation of the SWMU shows that it has provided complete concrete containment of constituents since the SWMU was put in operation;

- The concentrations of identified PCOCs in the soil and/or groundwater adjacent to the unit are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment); and

If performed, the results of the air investigation are within OSHA limits.

If the above is not true, then further investigation will be necessary.

6.2 SWMU NUMBER 4 -- SETTLING BASIN SUMP

6.2.1 Historical Investigation

An extensive evaluation of the history of the settling basin sump will be necessary to determine the extent to which the SWMU will be investigated. Detailed drawings, historical plot plans of the site, and specifications related to SWMU 4 will be inspected to determine if it has provided complete containment from the time it was put in operation until the present. The investigation will determine how the oil was handled prior to the construction of the SWMU. The historical investigation will also identify, where possible, which oils have been contained in the sump, and determine their constituents.

6.2.2 Constituent Sampling Plan

It is also necessary to determine the concentrations of constituents in SWMU 4 to evaluate if the detected constituents are considered potentially hazardous. Three sampling rounds will be conducted, spaced at least two weeks apart. During each sampling round, one oil sample will be collected from the discharge from the settling basin sump (SWMU 4). The samples will be filtered and preserved as appropriate and all samples will be placed in clean, labeled glass jars. The samples will be cooled to 4°C for transport to the laboratory, where they will be analyzed for the parameters listed in Table 6-1.

6.2.3 Soil Investigation

Soil and groundwater, if present, will be collected near the pit bottom and through stained soil, if present, adjacent to the tank, using directional drilling (if necessary). The samples will be analyzed to determine if PCOCs from the wastewater are present. If stained soil is found, one boring or test pit will be conducted through the stain, and one adjacent to the pit bottom.

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6.2.3.1 Soil/Groundwater Sampling and Analysis

Non-dedicated split-spoon samplers (for borings) or stainless steel trowels (for test pits) will be employed to collect a series of soil samples at depths of 6", 12", 18" and 24" below the selected sampling locations. The borings or test pits will be logged by a geologist. In the description of soil samples, color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, moisture, and characteristic features such as mineral/rock constituents, texture, fabric, and bedding. Soil samples will be collected in 8-ounce glass jars, and cooled to 4 °C until analyzed. The collected samples will be analyzed for the parameters listed in Table 6-2. For each sampling location the samples collected at depths of 6" and 12" will be analyzed first. If these samples do not show levels of concern, as determined by risk analysis, then the samples collected at depths of 18" and 24" will not be analyzed.

If standing water is present in the boring or test pit, a water sample will be collected in addition to the soil samples to determine if there have been releases of potentially hazardous constituents. Water samples will be collected, placed in 8-ounce plastic jars, acidified to a pH < 2, and cooled to 4°C until analyzed. Water samples will be analyzed for the parameters listed in Table 6-1.

6.2.4 Air Investigation

If potentially volatile compounds are detected at elevated concentrations in SWMU 4, it will be necessary to determine if any of these compounds are volatilizing at elevated concentrations. This will be accomplished by taking general air measurements using detection tubes (e.g., Dräger) appropriate for constituents detected in the SWMU. Measurements will be taken at several locations around the unit. If OSHA air limits applicable to employees stationed at the unit are not exceeded, it can be assumed that off-site public health and environment will not be significantly impacted.

6.2.5 Conclusions

The results of the SWMU investigation will be evaluated to determine if any further investigation will be necessary.

No further investigation will be necessary if the following is true:

- The concentrations of identified PCOCs in the wastewater and sludges in the SWMU are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

If the above is not true, then no further investigation will be necessary if all the following are true:

- Historical investigation of the SWMU shows that it has provided complete concrete containment of constituents since the SWMU was put in operation;

- The concentrations of identified PCOCs in the soil and/or groundwater adjacent to the unit are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment); and

- If performed, the results of the air investigation are within OSHA limits.

If the above is not true, then further investigation will be necessary.

6.3 SWMU NUMBERS 5, 6 AND 7 -- WASTEWATER TREATMENT LAGOONS

6.3.1 Historical Investigation

An extensive evaluation of the history of SWMUs 5 through 7 will be necessary to determine the extent to which each SWMU will be investigated. Detailed drawings, historical plot plans of the site, and specifications related to SWMUs 5 through 7 will be inspected to determine if they have provided complete containment from the time they were put in operation until the present. The investigation will determine how the wastewater was handled prior to construction of these SWMUs. The historical investigation will also identify, where possible, oils and their constituents, in

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addition to those identified in Section 3.0, that were used in facilities sending wastewater to these SWMUs.

6.3.2 Constituent Sampling Plan

It is also necessary to determine the concentrations of constituents in SWMUs 5 through 7 to evaluate if the detected constituents are considered potentially hazardous. Three sampling rounds will be conducted, spaced at least two weeks apart. During each sampling round, one water sample will be collected from the discharge from each lagoon (SWMUs 5 - 7). The water samples will be filtered and preserved as appropriate and all samples will be placed in clean, labeled glass jars. The samples will be cooled to 4°C for transport to the laboratory, where they will be analyzed for the parameters listed in Table 6-1.

In addition to water sampling and analysis, it will be necessary to collect and analyze samples of the settled solids at the bottom of each lagoon (SWMUs 5 - 7). Three rounds of solids sampling will be performed coincident with the water sampling rounds. During each round of solids sampling, one composite sample from each lagoon will be analyzed. The composite will consist of three samples collected using a ponar sampler. Non-dedicated sampling equipment will be cleaned between locations using a brush, soapy water, fresh water, acetone, and a final distilled water rinse. The solids will be placed in clean, unpreserved, air-tight containers and cooled to 4°C for transport to the laboratory. The composites will be analyzed for the parameters presented in Table 6-2.

6.3.3 Soil Investigation

Soil and groundwater (if present) under the wastewater treatment lagoons will be sampled and analyzed to determine if a release of hazardous waste constituents from the lagoons has occurred. One boring or test pit per lagoon will be placed adjacent to stained soil, if present, or on the downstream side of the containment structure. Subject to these limitations, each boring or test pit will be conducted as close to the lagoons as safety and operating constraints will allow.

6.3.3.1 Soil/Groundwater Sampling and Analysis

Non-dedicated split-spoon samplers (for borings) or stainless steel trowels (for test pits) will be employed to collect a series of soil samples at depths of 6", 12", 18" and 24" below the selected sampling locations. The borings or test pits will be logged by a geologist. In the description of soil samples, color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, moisture, and characteristic features such as mineral/rock constituents, texture, fabric, and bedding. Soil samples will be collected in 8-ounce glass jars, and cooled to 4 °C until analyzed. The collected samples will be analyzed for the parameters listed in Table 6-2. For each sampling location the samples collected at depths of 6" and 12" will be analyzed first. If these samples do not show levels of concern, as determined by risk analysis, then the samples collected at depths of 18" and 24" will not be analyzed.

If standing water is present in the boring or test pit, a water sample will be collected in addition to the soil samples to determine if there has been releases of potentially hazardous constituents. Water samples will be collected, placed in 8-ounce plastic jars, acidified to a pH < 2, and cooled to 4 °C until analyzed. Water samples will be analyzed for the parameters listed in Table 6-1.

6.3.4 Air Investigation

If potentially volatile compounds are detected at elevated concentrations in SWMUs 5 through 7, it will be necessary to determine if any of these compounds are volatilizing at elevated concentrations. This will be accomplished by taking general air measurements using detection tubes (e.g., Drager) appropriate for constituents detected in the SWMU. Measurements will be taken at several locations around the units. If OSHA air limits applicable to employees stationed at the units are not exceeded, it can be assumed that off-site public health and environment will not be significantly impacted.

6.3.5 Conclusions

The results of the SWMU investigations will be evaluated to determine if any further investigation will be necessary.

No further investigation will be necessary if the following is true:

- The concentrations of identified PCOCs in the wastewater and sludges in the SWMU are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

If the above is not true, then no further investigation will be necessary if all the following are true:

- Historical investigation of the SWMU shows that it has provided complete concrete containment of constituents since the SWMU was put in operation;

- The concentrations of identified PCOCs in the soil and/or groundwater adjacent to the unit are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment); and

- If performed, the results of the air investigation are within OSHA limits.

If the above is not true, then further investigation will be necessary.

6.4 SWMU NUMBER 8 -- WASTEWATER POLISHING LAGOON

6.4.1 Historical Investigation

An extensive evaluation of the history of SWMU 8 will be necessary to determine the extent to which it will be investigated. Detailed drawings, historical plot plans of the site, and specifications related to SWMU 8 will be inspected to determine if it has provided complete containment from the time it was put in operation until the present. The investigation will determine how the wastewater was handled prior to construction of this SWMU. The historical investigation will also identify, where possible, oils and their constituents, in addition to those identified in Section 3.0, that were used in facilities sending wastewater to this SWMU.

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6.4.2 Constituent Sampling Plan

It is also necessary to determine the concentrations of constituents in SWMU 8 to evaluate if the detected constituents are considered potentially hazardous. Three sampling rounds will be conducted, spaced at least two weeks apart. During each sampling round, one sample will be collected from the discharge from the lagoon (SWMU 8). The samples will be filtered and preserved as appropriate and all samples will be placed in clean, labeled glass jars. The samples will be placed in iced coolers for transport to the laboratory, where they will be analyzed for the parameters listed in Table 6-1.

In addition to water sampling and analysis, it will be necessary to collect and analyze samples of the settled solids at the bottom of the polishing lagoon (SWMU 8). Three rounds of solids sampling will be performed at the same times as the water sampling rounds. During each round of solids sampling, three samples will be collected using a ponar sampler and then composited. Non-dedicated sampling equipment will be cleaned between locations using a brush, soapy water, fresh water, acetone, and a final distilled water rinse. The solids will be placed in clean, unpreserved, air-tight containers and cooled to 4°C for transport to the laboratory. The composites will be analyzed for the parameters presented in Table 6-2.

6.4.3 Soil Investigation

Soil and groundwater, if present, under the wastewater polishing lagoon will be sampled and analyzed to determine if a release of hazardous waste constituents has occurred. One boring or test pit will be placed adjacent to stained soil, if present, or on the downstream side of the containment structure. Subject to these limitations, the boring or test pit will be conducted as close to the polishing lagoon as safety and operating constraints will allow.

6.4.3.1 Soil/Groundwater Sampling and Analysis

Non-dedicated split-spoon samplers (for borings) or stainless steel trowels (for test pits) will be employed to collect a series of soil samples at depths of 6", 12", 18" and 24" below the selected sampling location. The boring or test pit will be logged by a geologist. In the description of soil samples, color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, moisture, and characteristic features such as mineral/rock constituents, texture, fabric, and bedding. Soil samples will be collected in 8-ounce glass jars, and cooled to 4 °C until analyzed. The collected samples will be analyzed for the parameters listed in Table 6-2. For each sampling location the samples collected at depths of 6" and 12" will be analyzed first. If these samples do not show levels of concern, as determined by risk analysis, then the samples collected at depths of 18" and 24" will not be analyzed.

If standing water is present in the boring or test pit, a water sample will be collected in addition to the soil samples to determine if there have been releases of potentially hazardous constituents. Water samples will be collected, placed in 8-ounce plastic jars, acidified to a pH < 2, and cooled to 4°C until analyzed. Water samples will be analyzed for the parameters listed in Table 6-1.

6.4.4 Air Investigation

If potentially volatile compounds are detected at elevated concentrations in SWMU 8, it will be necessary to determine if any of these compounds are volatilizing at elevated concentrations. This will be accomplished by taking general air measurements using detection tubes (e.g., Drager) appropriate for polynuclear aromatic hydrocarbons and volatile organic compounds found at the site. Measurements will be taken at several locations around the unit. If OSHA air limits applicable to employees stationed at the unit are not exceeded, it can be assumed that off-site public health and environment will not be significantly impacted.

6.4.5 Conclusions

The results of the SWMU investigation will be evaluated to determine if any further investigation will be necessary.

No further investigation will be necessary if the following is true:

- The concentrations of identified PCOCs in the wastewater and sludges in the SWMU are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

If the above is not true, then no further investigation will be necessary if all the following are true:

- Historical investigation of the SWMU shows that it has provided complete concrete containment of constituents since the SWMU was put in operation;

- The concentrations of identified PCOCs in the soil and/or groundwater adjacent to the unit are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment); and

- If performed, the results of the air investigation are within OSHA limits.

If the above is not true, then further investigation will be necessary.

6.5 SWMU NUMBER 9 -- CENTRAL WASTE OIL STORAGE TANK

6.5.1 Historical Investigation

An evaluation of the history of SWMU 9 will be necessary to determine the extent to which the tank will be investigated. Detailed drawings, historical plot plans of the site, and specifications related to SWMU 9 will be inspected to determine if it has provided complete containment from the time it was put in operation until the present. The investigation will determine how the waste oil was handled prior to construction of this SWMU. The historical investigation will also identify, where possible, which oils have been contained in the tank, and determine their constituents.

6.5.2 Constituent Sampling Plan

It will not be necessary to analyze the contents of the central waste oil storage tank because all oil contained in the tank is first received in the settling basin sump (SWMU 4); therefore, the constituents detected in SWMU 4 will be assumed to be present in SWMU 9.

6.5.3 Soil Investigation

Soil and, if present, groundwater samples will be collected in one location adjacent to the bermed concrete pad where trucks receive waste oil.

6.5.3.1 Soil/Groundwater Sampling and Analysis

Non-dedicated split-spoon samplers (for borings) or stainless steel trowels (for test pits) will be employed to collect a series of soil samples at depths of 6", 12", 18" and 24" below the selected sampling location. The boring or test pit will be logged by a geologist. In the description of soil samples, color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, moisture, and characteristic features such as mineral/rock constituents, texture, fabric, and bedding. Soil samples will be collected in 8-ounce glass jars, and cooled to 4 °C until analyzed. The collected samples will be analyzed for the parameters listed in Table 6-2. For each sampling location the samples collected at depths of 6" and 12" will be analyzed first. If these samples do not show levels of concern, as determined by risk analysis, then the samples collected at depths of 18" and 24" will not be analyzed.

If standing water is present in the boring or test pit, a water sample will be collected in addition to the soil samples to determine if there have been releases of potentially hazardous constituents. Water samples will be collected, placed in 8-ounce plastic jars, acidified to a pH < 2, and cooled to 4°C until analyzed. Water samples will be analyzed for the parameters listed in Table 6-1.

6.5.4 Conclusions

The results of the SWMU investigation will be evaluated to determine if any further investigation will be necessary.

No further investigation will be necessary if all of the following are true:

- Historical investigation of the SWMU shows that it has provided complete concrete containment of constituents since the SWMU was put in operation;

- The concentrations of identified PCOCs in the soil and/or groundwater adjacent to the unit are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment);

Further investigation will be necessary if any of the following are true:

- Historical investigation of the SWMU shows that it has not provided complete concrete containment of constituents since the SWMU was put in operation.

- Identified PCOCs are detected in the soil or groundwater beneath or adjacent to the unit above acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

6.6 SWMU NUMBERS 10 AND 11 -- CONTINUOUS CASTER HEAVY SCALE PIT AND FINE SCALE PIT

6.6.1 Historical Investigation

The history of SWMUs 10 and 11 will be documented with detailed drawings, historical plot plans of the site, and specifications. The historical investigation will also identify, where possible, oils and their constituents, in addition to those identified in Section 3.0, that were used in facilities sending wastewater to these SWMUs.

6.6.2 Constituent Sampling Plan

It is also necessary to determine the concentrations of constituents in SWMUs 10 and 11 to evaluate if the detected constituents are considered potentially hazardous.

The investigation of SWMUs 10 and 11 will be accomplished by analyzing both the water and solids contained in each pit.

Three water sampling rounds will be conducted, spaced at least two weeks apart. During each sampling round, one water sample will be collected from the discharge of each pit. Samples will be filtered and preserved as appropriate and placed in clean, labeled glass jars. The samples will be cooled to 4°C for transport to the laboratory, where the samples will be analyzed for the parameters listed in Table 6-1.

Three rounds of solids sampling will also be performed coincident with the water sampling rounds. During each round, three samples will be collected from each pit using a ponar sampler and then composited. Non-dedicated sampling equipment will be cleaned between locations using a brush, soapy water, fresh water, acetone, and a final distilled water rinse. The solids will be placed in clean, unpreserved, airtight containers for transport to the laboratory. The composite from each pit will be analyzed for the parameters presented in Table 6-2.

6.6.3 Air Investigation

If potentially volatile compounds are detected at elevated concentrations in SWMUs 10 and 11, it will be necessary to determine if any of these compounds are volatilizing at elevated concentrations. This will be accomplished by taking general air measurements using detection tubes (e.g., Drager) appropriate for constituents detected in the SWMU. Measurements will be taken at several locations around the units. If OSHA air limits applicable to employees stationed at the units are not exceeded, it can be assumed that off-site public health and environment will not be significantly impacted.

6.6.4 Conclusions

These scale pits were constructed at the same time as the continuous caster unit. Therefore, it is known there was no prior discharge of wastewater to these units, and it is also known there was no discharge of wastewater from the caster prior to the use of these units. These units are very new, and no soil borings are anticipated.

If the air investigation is performed, and the results are within OSHA limits, no further investigation will be performed. However, a plan for further investigation will be developed if volatiles are present at concentrations above the OSHA limits in the air above the unit.

6.7 SWMU NUMBER 12 -- PIPE MILL OIL SEPARATOR

6.7.1 Constituent Sampling Plan

The material in the pipe mill oil separator will be sampled and analyzed in three rounds, spaced at least two weeks apart. During each sampling round, one composite water sample will be collected from the discharge from the oil separator and a grab sample will be collected from the oil layer. Samples will be placed in clean, labeled glass jars and preserved as appropriate. The samples will be cooled to 4°C for transport to the laboratory, where they will be analyzed for the parameters listed in Table 6-1.

6.7.2 Soil Investigation

One boring or test pit will be placed adjacent to stained soil, if present, or on the downstream side of the containment structure. Subject to these limitations, the boring or test pit will be conducted as close to the pipe mill oil separator tank as safety and operating constraints will allow.

6.7.2.1 Soil/Groundwater Sampling and Analysis

Non-dedicated split-spoon samplers (for borings) or stainless steel trowels (for test pits) will be employed to collect a series of soil samples at depths of 6", 12", 18" and 24" below the selected sampling location. The borings or test pits will be logged by a geologist. In the description of soil samples, color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, mois-

ture, and characteristic features such as mineral/rock constituents, texture, fabric, and bedding. Soil samples will be collected in 8-ounce glass jars, and cooled to 4 °C until analyzed. The collected samples will be analyzed for the parameters listed in Table 6-2. For each sampling location the samples collected at depths of 6" and 12" will be analyzed first. If these samples do not show levels of concern, as determined by risk analysis, then the samples collected at depths of 18" and 24" will not be analyzed.

If standing water is present in the boring or test pit, a water sample will be collected in addition to the soil samples to determine if there have been releases of potentially hazardous constituents. Water samples will be collected, placed in 8-ounce plastic jars, acidified to a pH < 2, and cooled to 4°C until analyzed. Water samples will be analyzed for the parameters listed in Table 6-1.

6.7.3 Conclusions

The results of the SWMU investigation will be evaluated to determine if any further investigation will be necessary.

No further investigation will be necessary if either of the following is true:

- The concentrations of identified PCOCs in the wastewater and sludges in the SWMU are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment); or

- The concentrations of identified PCOCs in the soil and/or groundwater adjacent to the unit are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

If neither of the above is true, further investigation will be necessary.

6.8 SWMU NUMBER 13 -- PIPE MILL EXPANDER PIT

6.8.1 Historical Investigation

An extensive evaluation of the history of SWMU 13 will be necessary to determine the extent to which the pit will be investigated. Detailed drawings, historical plot plans of the site, and specifications related to SWMU 13 will be inspected to determine if it has provided complete containment from the time it was put in operation until the present. The investigation will determine how the wastewater was handled prior to construction of this SWMU. The historical investigation will also identify, where possible, oils and their constituents, in addition to those identified in Section 3.0, that were used in the pipe mill expander.

6.8.2 Constituent Sampling Plan

The investigation of SWMU 13 will be accomplished by analyzing both the water and solids contained in the pit.

Three water sampling rounds will be conducted, spaced at least two weeks apart. During each sampling round, one water sample will be collected from the discharge of the pit. Samples will be filtered and preserved as appropriate and placed in clean, labeled glass jars. The samples will be cooled to 4°C for transport to the laboratory, where they will be analyzed for the parameters listed in Table 6-1.

Three rounds of solids sampling will also be performed coincident with the water sampling rounds. During each round, three samples will be collected from the pit, using a ponar sampler, and then composited. Non-dedicated sampling equipment will be cleaned between locations using a brush, soapy water, fresh water, acetone, and a final distilled water rinse. The solids will be placed in clean, unpreserved, airtight containers for transport to the laboratory. The composites from the pit will be analyzed for the parameters presented in Table 6-2.

6.8.3 Conclusions

If the results of the historical investigation do not conclusively show that the unit has provided complete concrete containment since the time the pipe mill was put in operation until the present, a soil and/or groundwater investigation will be pro-

posed as an addendum to this work plan. No soil borings are proposed immediately adjacent to this SWMU at this time. This is due to the difficulty of advancing a boring indoors through thick concrete floors where the locations of utility lines and piping beneath the SWMU area are uncertain.

6.9 SWMU NUMBER 14 -- SMALL ROLLING MILL SCALE PIT (28" MILL)

6.9.1 Historical Investigation

An extensive evaluation of the history of SWMU 14 will be necessary to determine the extent to which the pit will be investigated. Detailed drawings, historical plot plans of the site, and specifications related to SWMU 14 will be inspected to determine if it has provided complete containment from the time it was put in operation until the present. The investigation will determine how the wastewater was handled prior to construction of this SWMU. The historical investigation will also identify, where possible, oils and their constituents, in addition to those identified in Section 3.0, that were used in the 28" mill.

6.9.2 Constituent Sampling Plan

The investigation of SWMU 14 will be accomplished by analyzing both the water and solids contained in the pit.

Three water sampling rounds will be conducted, spaced at least two weeks apart. During each sampling round, one water sample will be collected from the discharge of the pit. Samples will be filtered and preserved as appropriate and placed in clean, labeled glass jars. The samples will be cooled to 4°C for transport to the laboratory, where the samples will be analyzed for the parameters listed in Table 6-1.

Three rounds of solids sampling will also be performed coincident with the water sampling rounds. During each round, three samples will be collected from the pit using a ponar sampler and then composited. Non-dedicated sampling equipment will be cleaned between locations using a brush, soapy water, fresh water, acetone, and a final distilled water rinse. The solids will be placed in clean, unpreserved, airtight containers for transport to the laboratory. The composite from the pit will be analyzed for the parameters presented in Table 6-2.

6.9.3 Conclusions

If the results of the historical investigation do not conclusively show that the unit has provided complete concrete containment since the time the rolling mill was put in operation until the present, a soil and/or groundwater investigation will be proposed as an addendum to this work plan. No soil borings are proposed immediately adjacent to this SWMU at this time. This is due to the difficulty of advancing a boring indoors through thick concrete floors where the locations of utility lines and piping beneath the SWMU area are uncertain.

6.10 SWMU NUMBER 15 -- MEDIUM ROLLING MILL SCALE PIT (35" MILL)

6.10.1 Historical Investigation

An extensive evaluation of the history of SWMU 15 will be necessary to determine the extent to which the pit will be investigated. Detailed drawings, historical plot plans of the site, and specifications related to SWMU 15 will be inspected to determine if it has provided complete containment from the time it was put in operation until the present. The investigation will determine how the wastewater was handled prior to construction of this SWMU. The historical investigation will also identify, where possible, oils and their constituents, in addition to those identified in Section 3.0, that were used in the 35" mill.

6.10.2 Constituent Sampling Plan

The investigation of SWMU 15 will be accomplished by analyzing both the water and solids contained in the pit.

Three water sampling rounds will be conducted, spaced at least two weeks apart. During each sampling round, one water sample will be collected from the discharge of the pit. Samples will be filtered and preserved as appropriate and placed in clean, labeled glass jars. The samples will be cooled to 4°C for transport to the laboratory, where they will be analyzed for the parameters listed in Table 6-1.

Three rounds of solids sampling will also be performed coincident with the water sampling rounds. During each round, three samples will be collected from the pit,

using a ponar sampler, and then composited. Non-dedicated sampling equipment will be cleaned between locations using a brush, soapy water, fresh water, acetone, and a final distilled water rinse. The solids will be placed in clean, unpreserved, air-tight containers for transport to the laboratory. The composite from the pit will be analyzed for the parameters presented in Table 6-2.

6.10.3 Conclusions

If the results of the historical investigation do not conclusively show that the unit has provided complete concrete containment since the time the rolling mill was put in operation until the present, a soil and/or groundwater investigation will be proposed as an addendum to this work plan. No soil borings are proposed immediately adjacent to this SWMU at this time. This is due to the difficulty of advancing a boring indoors through thick concrete floors where the locations of utility lines and piping beneath the SWMU area are uncertain.

6.11 SWMU NUMBER 16 -- LARGE ROLLING MILL SCALE PIT (44" MILL)

6.11.1 Historical Investigation

An extensive evaluation of the history of SWMU 16 will be necessary to determine the extent to which the pit will be investigated. Detailed drawings, historical plot plans of the site, and specifications related to SWMU 16 will be inspected to determine if it has provided complete containment from the time it was put in operation until the present. The investigation will determine how the wastewater was handled prior to construction of this SWMU. The historical investigation will also identify, where possible, oils and their constituents, in addition to those identified in Section 3.0, that were used at the 44" mill.

6.11.2 Constituent Sampling Plan

The investigation of SWMU 16 will be accomplished by analyzing both the water and solids contained in the pit.

Three water sampling rounds will be conducted, spaced at least two weeks apart. During each sampling round, one water sample will be collected from the discharge of the pit. Samples will be filtered and preserved as appropriate and placed in

clean, labeled glass jars. The samples will be cooled to 4°C for transport to the laboratory, where the sample from the pit will be analyzed for the parameters listed in Table 6-1.

Three rounds of solids sampling will also be performed coincident with the water sampling rounds. During each round, three samples will be collected from the pit using a ponar sampler and then composited. Non-dedicated sampling equipment will be cleaned between locations using a brush, soapy water, fresh water, acetone, and a final distilled water rinse. The solids will be placed in clean, unpreserved, airtight containers for transport to the laboratory. The composite from the pit will be analyzed for the parameters presented in Table 6-2.

6.11.3 Conclusions

If the results of the historical investigation do not conclusively show that the unit has provided complete concrete containment since the time the rolling mill was put in operation until the present, a soil and/or groundwater investigation will be proposed as an addendum to this work plan. No soil borings are proposed immediately adjacent to this SWMU at this time. This is due to the difficulty of advancing a boring indoors through thick concrete floors where the locations of utility lines and piping beneath the SWMU area are uncertain.

6.12 SWMU NUMBER 18 - HWM1 LANDFILL

6.12.1 Objective

The objective of this investigation is to collect sufficient field data to determine whether PCOCs are being released from HWM1, and to quantify the mass and concentration of PCOCs for the potential pathway identified for this unit, including subsequent transport in groundwater.

6.12.2 Work Plan

6.12.2.1 Surface Water and Sediment Sampling

Water in Laurel Run will be sampled at six points shown in Figure 6-1, with two sampling points upstream of the fault, and four sampling points downstream of the fault. Field measurements of pH, specific conductance and temperature will be made on all samples. The samples will be placed in labeled jars, stored at 4°C at a pH < 2, and shipped to the laboratory to be analyzed for the parameters indicated in Table 6-3, which are PCOCs identified in EAF dust. These analyses will be undertaken to assess the impact of potentially contaminated groundwater recharge into Laurel Run along the fault.

Six stream sediment samples will be field collected in air-tight, glass jars, labeled, shipped to the laboratory and analyzed for the parameters indicated in Table 6-3. The samples will be collected at the same locations as the stream water sample collection points shown in Figure 6-1.

6.12.2.2 Groundwater Investigation

A network of monitoring wells, consisting of wells MW-5, MW-6, MW-7, MW-8, MW-9, and MW-10, monitors the groundwater in the vicinity of HWM1 (Figure 6-2).

The groundwater elevations and the groundwater quality results are presented in the report entitled "Groundwater Quality Assessment and Abatement Program for HWM1, Bethlehem Steel, Steelton, Pennsylvania".

The groundwater flow in the vicinity of the NE-SW trending fault has a strong component in the northeasterly direction. This flow direction can be inferred from Figure 6-3, and can also be expected on theoretical grounds because the hydraulic conductivity contrast between the less permeable Gettysburg sandstone south of the fault and the more permeable Epler limestone north of the fault induces a strong flow component parallel to the fault on, or just north of the fault. The geochemical

TABLE 6-3

EAF DUST

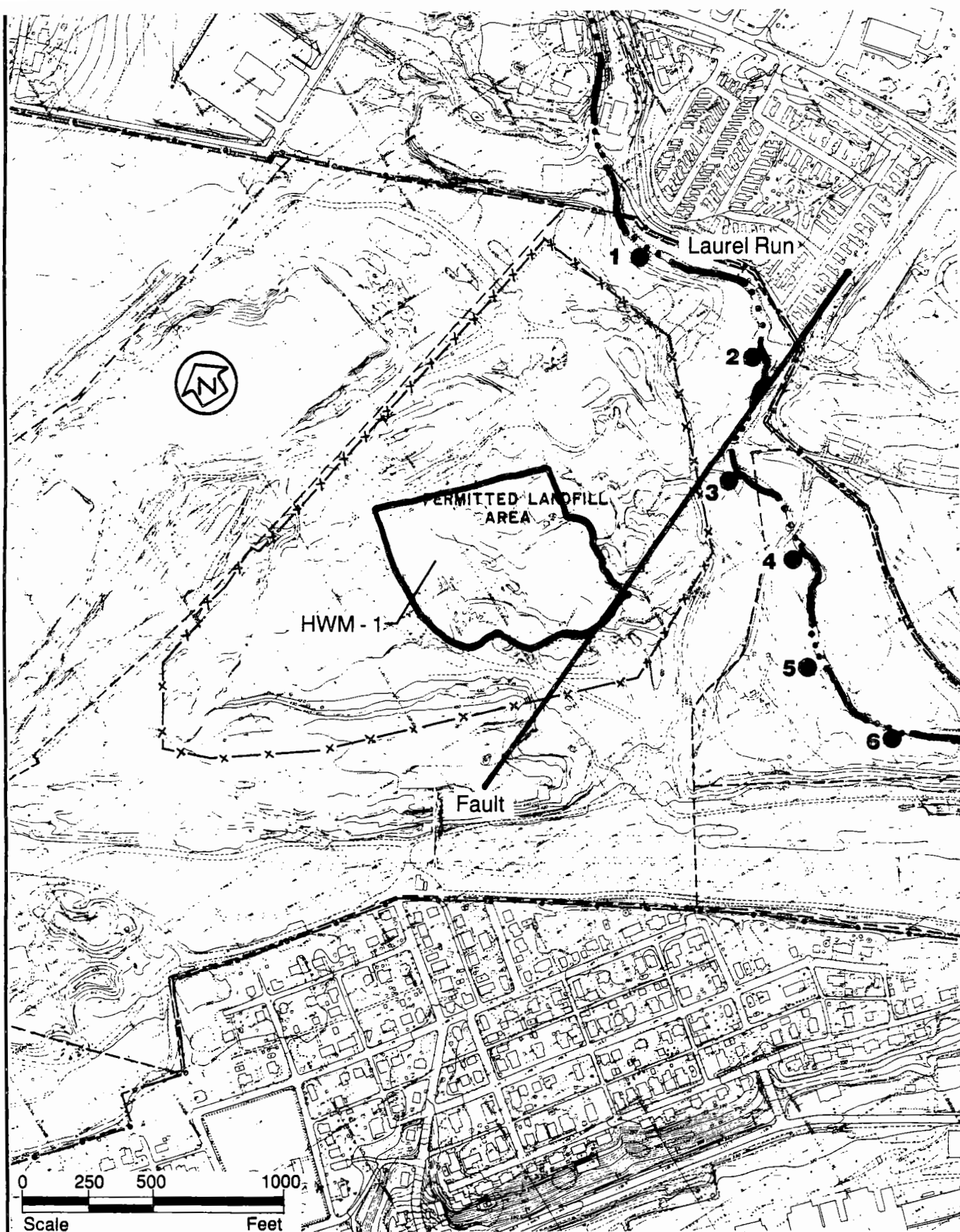
PARAMETERS FOR ANALYSIS

Cadmium (total and dissolved)

Chromium (total and dissolved)

Lead (total and dissolved)

Zinc (total and dissolved)



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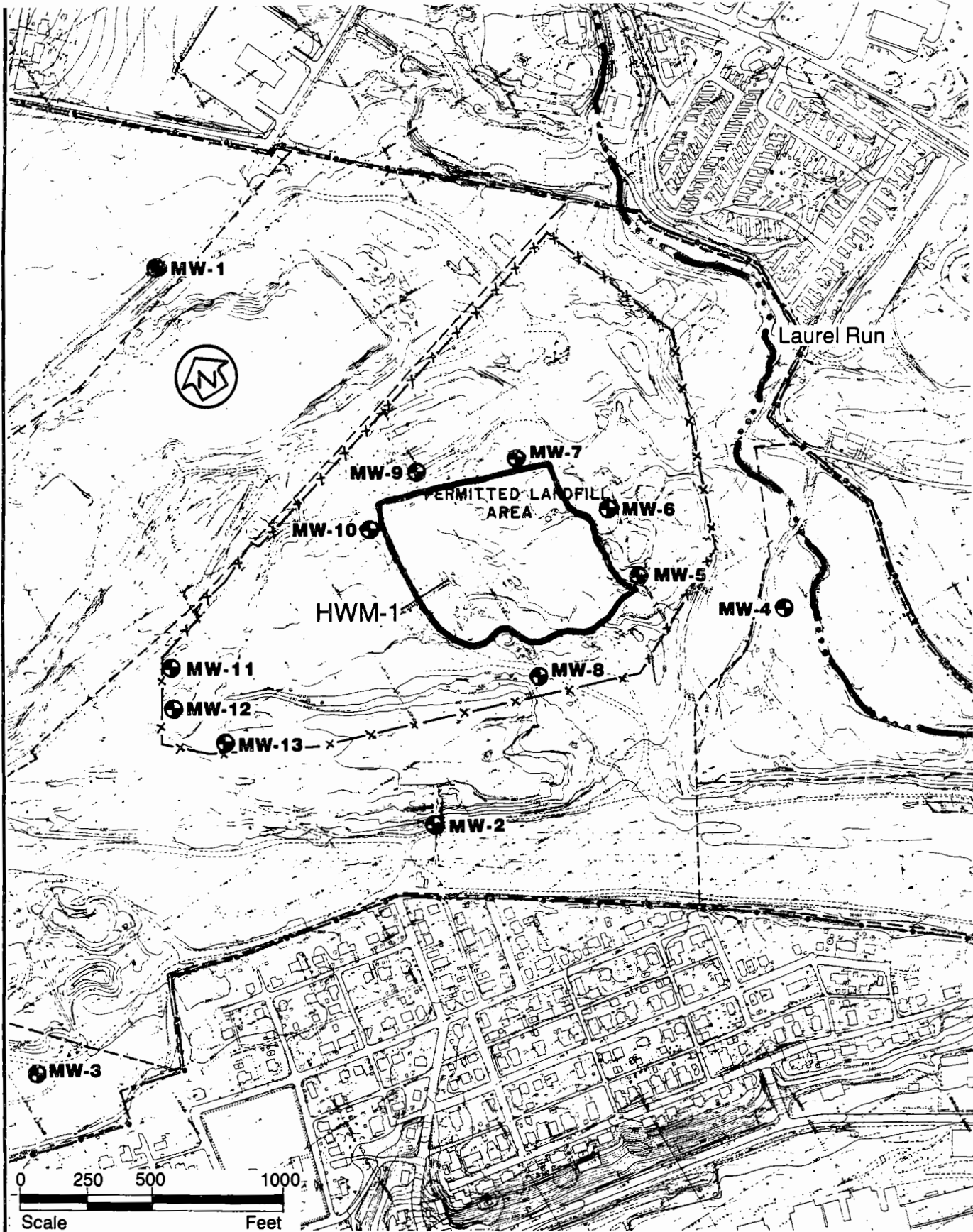
DWG. NO.

Figure 6 - 1

**Bethlehem Steel Corporation
Steelton Plant
Steelton, PA**

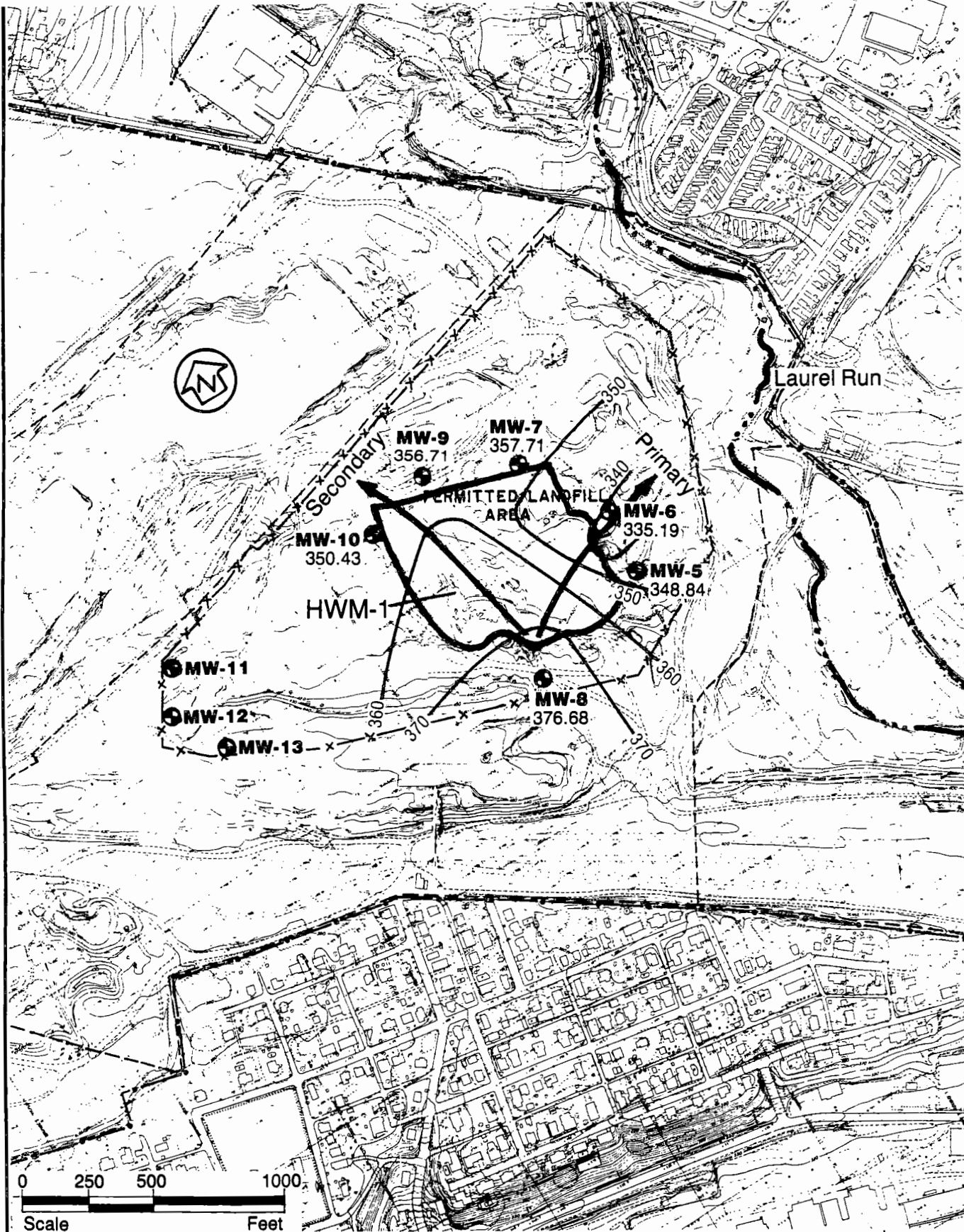
Proposed Stream Sampling Locations
Laurel Run

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DWN.BY: JAM	SCALE: AS SHOWN	DATE	DWG. NO.	
CHK'D.BY:	APPR.BY:	August 1989	Figure 6-2	

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DWN.BY: JAM

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April
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Figure 6-3

CHK'D.BY: JP

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Groundwater Contours
September, 1986 Data By Baker Engineers

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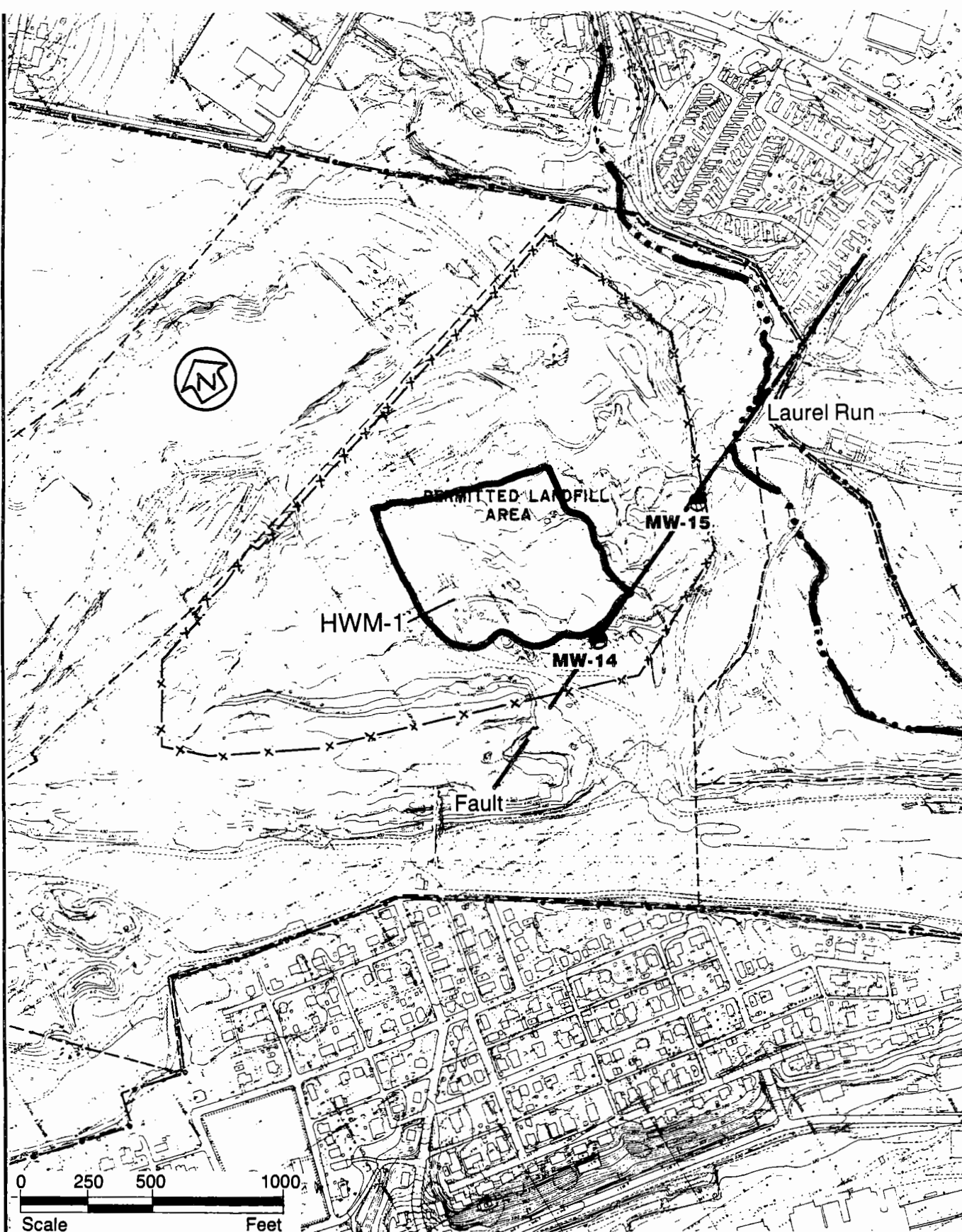
analyses performed by Baker/TSA, Inc. (Reference: "Groundwater Quality Assessment and Abatement Program for HWM1, Bethlehem Steel, Steelton Plant, Steelton, Pennsylvania," November, 1987) reinforce the hypothesis of a strong northeasterly groundwater flow component on, or just north of the fault and discharging into Laurel Run. Thus, there appears to be a need to better address the possibility of contaminant transport along or near the NE-SW trending fault. Two additional downgradient monitoring wells (MW-14 and MW-15) will be installed at the locations shown in Figure 6-4 to improve the definition of the flow pattern and to detect changes in water quality on or along the NE-SW trending fault. MW-14 is located on the fault trend, immediately upgradient of the HWM1 landfill, and MW-15 is located on the fault trend, downgradient of the HWM1 landfill and in a topographically low area.

The monitoring network is designed to furnish sufficient information about the site to determine whether hazardous waste constituents are being released off-site and, if they are, to define the extent and degree of contamination and the characteristics controlling transport. If there is evidence of pollutants being released migrating off-site in quantities of concern, as determined by risk analysis, BSC will install additional monitoring wells in the area under consideration. The purpose of the expanded monitoring well network will be to determine the three-dimensional flow regime as well as the vertical and horizontal extent of the plume. In the proposed investigation plan, BSC will supplement the first phase of the investigation with a second phase consisting of the installation and monitoring of 3 to 6 well nests, if the findings of the first phase indicate that hazardous constituents from HWM1 are being released off-site in quantities of concern. The location of wells and sampling protocol will be determined after the decision to proceed with the second phase of the investigation.

6.12.2.2.1 Soil/Rock Borings for Monitoring Well Installation

Drilling for monitoring well installation will be conducted using hollow-stem augering techniques in overburden, and diamond core drilling in bedrock.

Soil drilling will be conducted using hollow-stem augers such that the bore holes will have a minimum diameter of 8 inches. During drilling, the bore holes will be cased throughout the slag/fill. Soil samples will be collected using continuous split-spoon



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Figure 6-4

**Bethlehem Steel Corporation
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Steelton, PA**

**Test Well Locations
HWM-1 Landfill Investigation**

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samplers and will be logged by a geologist. In the description of soil samples, their color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, moisture, and characteristic features such as mineral/rock constituents, texture, fabric and bedding. The geologist will also note sample recovery, changes in the rate of advancement, groundwater occurrences (flows of water into the borehole or water level drops) as well as any incidents affecting the progress of work.

Bedrock drilling will be conducted using NX size diamond core barrels. Continuous

core samples will be collected from the core barrel and will be logged by a geologist. After coring, the borings will be over-reamed with an auger to achieve the 8-inch minimum diameter.

6.12.2.2.2 Monitoring Well Installation

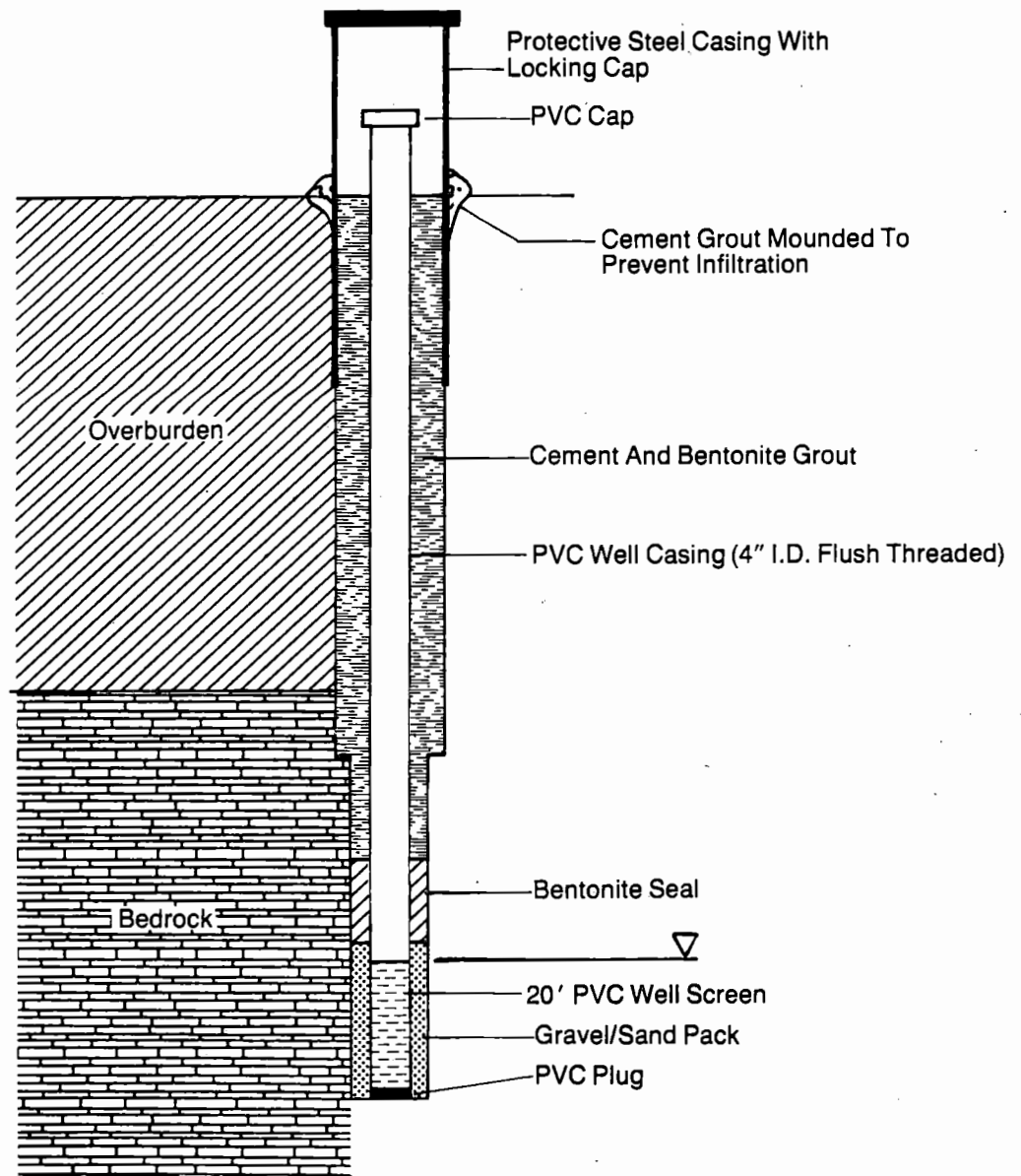
Monitoring well installation will conform with RCRA Groundwater Monitoring Requirements (40 CFR 265, Subpart F). Wells will be constructed of 4-inch I.D., flush jointed PVC pipe, screen, and riser (Figure 6-5). Each well will be screened over a 20-foot interval at the upper portion of the saturated interval.

For all wells, a formation stabilizer of appropriately-sized sand (sand pack) will be placed in the annular space surrounding the well screen to a level of about three feet above the top of the screened interval. The annular space will be sealed with bentonite and the remaining annular space will be sealed using a cement/ bentonite grout. The grout will extend above the surface and be mounded to prevent inflow of drainage from the surface. A protective steel casing and a locking cap will be installed over the riser and cemented in place. A well installation sketch and specification will be completed for each well installed.

Monitoring wells MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-14, and MW--15 will be sampled three times, separated by two-month intervals, for the parameters indicated in Table 6-3. These analyses will be utilized to assess any groundwater impact from HWM1. Samples will be collected, preserved, transported and analyzed as outlined in the Quality Assurance Project Plan.

6.12.3 Conclusions

After the tasks described in Section 6.12.2 of this work plan have been completed, the results will be evaluated to determine if further investigation of HWM1 is necessary. No further investigation will be necessary if analysis indicates that concentrations of identified PCOCs present in the groundwater or surface waters in the vicinity of the landfill are below threshold levels determined by risk assessment. At any rate, total metal concentrations below the National Interim Primary Drinking Water Standards will be considered acceptable without a risk assessment.



The Chester Engineers			SHEET NO.	Bethlehem Steel Corporation Steelton Plant Steelton, PA Typical Monitoring Well Construction In A Bedrock Aquifer
			DWG. NO.	
DWN.BY: JAM	SCALE: NONE	DATE	Figure 6-5	
CHK'D.BY: JP	APPR.BY:	August 1989		

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6.13 SWMU NUMBER 20 -- HWM3 PELLETIZER

6.13.1 Historical Investigation

An extensive evaluation of the history of SWMU 20 will be necessary to determine the extent to which the pelletizer will be investigated. Detailed drawings, historical plot plans of the site, and specifications related to SWMU 20 will be inspected to determine if the bermed asphalt pad currently located beneath the pelletizer has existed and provided containment from the time the pelletizer was put in operation.

6.13.2 Constituent Sampling Plan

EAF dust is handled by this SWMU and, since the composition of EAF dust was previously determined, it will not be necessary to analyze the contents of this SWMU.

6.13.3 Soil Investigation

Borings will be conducted through the asphalt at three locations in the pad where water could accumulate. One of these borings will also be used in the investigation of the Pelletizer Runoff Tank (SWMU 21). Soil and, if present, groundwater samples will be collected from these borings. The samples will be analyzed to determine if EAF dust PCOCs are present.

Additionally, one boring or test pit will be performed on each side of the pad in the area immediately surrounding it to address the perimeter of this containment structure. As advised by EPA, borings or test pits will be located approximately one foot away from the pad.

6.13.3.1 Soil/Groundwater Sampling and Analysis

Non-dedicated split-spoon samplers (for borings) or stainless steel trowels (for test pits) will be employed to collect a series of soil samples at depths of 6", 12", 18" and 24" below the selected sampling locations. In the case of the boring that will also be used in the investigation of the Pelletizer Runoff Tank (SWMU 21), two sampling intervals will be established for the collection of soil samples: the first 6", 12", 18", and 24" below the HWM3 Pelletizer sampling location; and the second 6", 12", 18", and 24" below the bottom of the Pelletizer Runoff Tank. The borings or test pits

will be logged by a geologist. In the description of soil samples, color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, moisture, and characteristic features such as mineral/rock constituents, texture, fabric, and bedding. Soil samples will be collected in 8-ounce glass jars, and cooled to 4°C until analyzed. The collected samples will be analyzed for the parameters listed in Table 6-3. For each sampling location the samples collected at depths of 6" and 12" will be analyzed first. If these samples do not show levels of concern, as determined by risk analysis, then the samples collected at depths of 18" and 24" will not be analyzed.

If standing water is present in the boring or test pit, a water sample will be collected in addition to the soil samples to determine if there has been a release of PCOCs. Water samples will be collected, placed in 8-ounce plastic jars, acidified to a pH < 2, and cooled to 4°C until analyzed. Water samples will be analyzed for the parameters listed in Table 6-3.

6.13.4 Conclusions

The results of the SWMU investigation will be evaluated to determine if any further investigation will be necessary.

No further investigation will be necessary if all of the following are true:

- . Historical investigation of the SWMU shows that it has been situated on an asphalt pad since the SWMU was put into operation; and
- . Concentrations of EAF dust PCOCs detected in the soil and/or groundwater beneath the pelletizer are within acceptable limits (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

Further investigation will be necessary if:

- . Concentrations of EAF dust PCOCs detected in the soil and/or groundwater beneath the pelletizer are above acceptable limits (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

6.14 SWMU NUMBER 21 -- PELLETIZER RUNOFF TANK

6.14.1 Constituent Sampling Plan

EAF dust is handled by this SWMU and, since the composition of EAF dust was previously determined, it will not be necessary to analyze the contents of this SWMU.

6.14.2 Soil Investigation

One boring will be drilled through the Pelletizer asphalt pad in an area adjacent to the Pelletizer Runoff Tank, as discussed in Section 6.13.3.

Soil and groundwater, if present, will be collected and analyzed to determine if hazardous waste constituents from dust are present. If safety constraints or accessibility problems dictate that a boring location be placed more than 1 foot away from the bottom edge of the tank, directional drilling will be used such that the bottom of the borehole will be less than 1 foot horizontally from the bottom edge of the tank.

6.14.2.1 Soil/Groundwater Sampling and Analysis

Non-dedicated split-spoon samplers will be employed to collect a series of soil samples at depths of 6", 12", 18" and 24" below the pelletizer runoff tank. The borings or test pits will be logged by a geologist. In the description of soil samples, color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, moisture, and characteristic features such as mineral/rock constituents, texture, fabric, and bedding. Soil samples will be collected in 8-ounce glass jars, and cooled to 4°C until analyzed. The collected samples will be analyzed for the parameters listed in Table 6-3. For each sampling location the samples collected at depths of 6" and 12" will be analyzed first. If these samples do not show levels of concern, as determined by risk analysis, then the samples collected at depths of 18" and 24" will not be analyzed.

If standing water is present in the boring or test pit, a water sample will be collected in addition to the soil samples to determine if there have been releases of potentially hazardous constituents. Water samples will be collected, placed in 8-

ounce plastic jars, acidified to a pH < 2, and cooled to 4°C until analyzed. Water samples will be analyzed for the parameters listed in Table 6-3.

6.14.3 Conclusions

The results of the SWMU investigation will be evaluated to determine if any further investigation will be necessary.

No further investigation will be necessary if the following is true:

- The concentrations of EAF dust PCOCs in the soil and/or groundwater adjacent to the unit are below acceptable limits as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

Further investigation will be necessary if:

- Concentrations of EAF dust PCOCs detected in the soil or groundwater beneath the pelletizer runoff tank are above acceptable limits (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

6.15 SWMU NUMBER 22 -- NO. 2 PELLETIZER

6.15.1 Historical Investigation

An extensive evaluation of the history of SWMU 22 will be necessary to determine the extent to which the unit will be investigated. Detailed drawings, historical plot plans of the site, and specifications related to SWMU 22 will be inspected to determine if the pad currently located beneath the truck filling area has existed and provided containment from the time the pelletizer was put in operation.

6.15.2 Constituent Sampling Plan

EAF dust is handled by this SWMU and, since the composition of EAF dust was previously determined, it will not be necessary to analyze the contents of this SWMU.

6.15.3 Soil Investigation

If the historical investigation shows that the concrete pad located beneath the truck filling area has existed and provided containment since the time the pelletizer was put in operation, one boring or test pit will be placed near the concrete pad. Soil and, if present, groundwater will be collected from this boring. Otherwise one boring or test pit will be placed on each side of the building. The borings or test pits will be located as close to the containment structure as safety and operating constraints will allow.

6.15.3.1 Soil/Groundwater Sampling and Analysis

Non-dedicated split-spoon samplers (for borings) or stainless steel trowels (for test pits) will be employed to collect a series of soil samples at depths of 6", 12", 18" and 24" below the selected sampling locations. The borings or test pits will be logged by a geologist. In the description of soil samples, color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, moisture, and characteristic features such as mineral/rock constituents, texture, fabric, and bedding. Soil samples will be collected in 8-ounce glass jars, and cooled to 4°C until analyzed. The collected samples will be analyzed for the parameters listed in Table 6-3. For each sampling location the samples collected at depths of 6" and 12" will be analyzed first. If these samples do not show levels of concern, as determined by risk analysis, then the samples collected at depths of 18" and 24" will not be analyzed.

If standing water is present in the boring or test pit, a water sample will be collected in addition to the soil samples. Water samples will be collected, placed in 8-ounce plastic jars, acidified to a pH < 2, and cooled to 4°C until analyzed. Water samples will be analyzed for the parameters listed in Table 6-3.

6.15.4 Conclusions

The results of the SWMU investigation will be evaluated to determine if any further investigation will be necessary.

No further investigation will be necessary if all of the following are true:

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Historical investigation of the SWMU shows that it has been situated on an asphalt pad since the SWMU was put into operation; and

The concentrations of EAF dust PCOCs in the soil and/or groundwater adjacent to the unit are below acceptable limits (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

Further investigation will be necessary if:

Historical investigation of the SWMU shows that it has not provided complete concrete containment of constituents since the SWMU was put in operation.

EAF dust PCOCs are detected in the soil and/or groundwater beneath or adjacent to the unit above acceptable limits (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

6.16 SWMU NUMBER 24 -- EAF SPRAY CHAMBERS DROP LEGS

6.16.1 Constituent Sampling Plan

EAF dust is handled by this SWMU and, since the composition of EAF dust was previously determined, it will not be necessary to analyze the contents of this SWMU.

6.16.2 Soil Investigation

One soil and, if present, groundwater sample will be collected in an area adjacent to each pad. If safety constraints or accessibility problems dictate that a boring location be placed more than 1 foot away from the edge of the pad, directional drilling will be used such that samples taken at a depth of 24 inches will be less than 1 foot horizontally from the edge of the pad.

6.16.3. Soil/Groundwater Sampling and Analysis

Non-dedicated split-spoon samplers (for borings) or stainless steel trowels (for test pits) will be employed to collect a series of soil samples at depths of 6", 12", 18" and 24" below the selected sampling locations. The borings or test pits will be logged by a geologist. In the description of soil samples, color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, moisture, and characteristic features such as mineral/rock constituents, texture, fabric, and bedding. Soil samples will be collected in 8-ounce glass jars, and cooled to 4°C until analyzed. The collected samples will be analyzed for the parameters listed in Table 6-3. For each sampling location the samples collected at depths of 6" and 12" will be analyzed first. If these samples do not show levels of concern, as determined by risk analysis, then the samples collected at depths of 18" and 24" will not be analyzed.

If standing water is present in a boring or test pit, a water sample will be collected in addition to the soil samples to determine if there have been releases of PCOCs. Water samples will be collected, placed in 8-ounce plastic jars, acidified to a pH < 2, and cooled to 4°C until analyzed. Water samples will be analyzed for the parameters listed in Table 6-3.

6.16.4 Conclusions

The results of the SWMU investigation will be evaluated to determine if any further investigation will be necessary.

No further investigation will be necessary if the following is true:

The concentrations of EAF dust PCOCs in the soil and/or groundwater adjacent to the unit are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

Further investigation will be necessary if the following is true:

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EAF dust PCOCs are detected in the soil or groundwater beneath or adjacent to the unit above acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

6.17 SWMU NUMBER 25 -- STEEL FOUNDRY ELECTRIC FURNACE BAGHOUSE BIN

6.17.1 Constituent Sampling Plan

Steel foundry electric furnace (SFEF) dust is handled by this SWMU. A sample of dust from the SFEF baghouse bin will be collected, placed in a clean unpreserved air-tight container and analyzed for the parameters listed in Table 6-3.

6.17.2 Soil Investigation

In order to determine if there have been past releases of the SFEF dust, soil and, if present, groundwater sampling and analysis will be performed in the area immediately surrounding the baghouse bin. One boring or test pit will be excavated adjacent to the concrete pad under the baghouse bin. The boring or test pit will be located as close to the baghouse bin as safety and operating constraints will allow.

6.17.2.1 Soil/Groundwater Sampling and Analysis

Non-dedicated split-spoon samplers (for borings) or stainless steel trowels (for test pits) will be employed to collect a series of soil samples at depths of 6", 12", 18" and 24" below the selected sampling location. The borings or test pits will be logged by a geologist. In the description of soil samples, color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, moisture, and characteristic features such as mineral/rock constituents, texture, fabric, and bedding. Soil samples will be collected in 8-ounce glass jars, and cooled to 4 °C until analyzed. The collected samples will be analyzed for the parameters listed in Table 6-3. For each sampling location the samples collected at depths of 6" and 12" will be analyzed first. If these samples do not show levels of concern, as determined by risk analysis, then the samples collected at depths of 18" and 24" will not be analyzed.

If standing water is present in the boring or test pit, a water sample will be collected in addition to the soil samples to determine if there have been releases of potentially hazardous constituents. Water samples will be collected, placed in 8-ounce plastic jars, acidified to a pH < 2, and cooled to 4°C until analyzed. Water samples will be analyzed for the parameters listed in Table 6-3.

6.17.3 Conclusions

The results of the SWMU investigation will be evaluated to determine if any further investigation will be necessary.

No further investigation will be necessary if:

The concentrations of identified PCOCs in the soil and/or groundwater adjacent to the unit are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

Further investigation will be necessary if:

PCOCs are detected in the soil or groundwater beneath or adjacent to the unit above acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

6.18 SWMU NUMBER 29 -- FROG AND SWITCH GRINDER CYCLONE HOLDING ROOM

6.18.1 Constituent Sampling Plan

A sample of the dust from the frog and switch grinder cyclone holding room will be collected, placed in a clean, unpreserved, air tight container, and analyzed for the parameters listed in Table 6-4.

6.18.2 Soil Investigation

If the analysis of the dust indicates that it poses a potential risk to the public health or environment, then soil and, if present, groundwater adjacent to the concrete pad

TABLE 6-4
FROG AND SWITCH GRINDER CYCLONE HOLDING ROOM
PARAMETERS FOR ANALYSIS

EP Toxicity (Metals) (a)

Phenols

Lead

Aluminum

Arsenic

Cadmium

Chromium

Selenium

Zinc

- (a) EP Toxicity testing will be performed only for those parameters whose total concentration is in excess of the EP Toxic characteristic value.

in front of the holding room doors will be sampled and analyzed to determine if a release of grinder dust hazardous constituents has occurred.

One boring or test pit will be excavated on each side of the concrete pad in front of the doors, as close to the pad as safety and operating constraints will allow.

6.18.2.1 Soil/Groundwater Sampling and Analysis

Non-dedicated split-spoon samplers (for borings) or stainless steel trowels (for test pits) will be employed to collect a series of soil samples at depths of 6", 12", 18" and 24" below the selected sampling locations. The borings or test pits will be logged by a geologist. In the description of soil samples, color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, moisture, and characteristic features such as mineral/rock constituents, texture, fabric, and bedding. Soil samples will be collected in 8-ounce glass jars, and cooled to 4°C until analyzed. The collected samples will be analyzed for the parameters listed in Table 6-4. For each sampling location the samples collected at depths of 6" and 12" will be analyzed first. If these samples do not show levels of concern, as determined by risk analysis, then the samples collected at depths of 18" and 24" will not be analyzed.

If standing water is present in the boring or test pit, a water sample will be collected in addition to the soil samples to determine if there have been releases of PCOCs. Water samples will be collected, placed in 8-ounce plastic jars, acidified to a pH < 2, and cooled to 4°C until analyzed. Water samples will be analyzed for the parameters listed in Table 6-4.

6.18.3 Conclusions

The results of the SWMU investigation will be evaluated to determine if any further investigation will be necessary.

No further investigation will be necessary if the following is true:

The concentrations of identified PCOCs in the soil and/or groundwater adjacent to the unit are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

Further investigation will be necessary if the following is true:

PCOCs are detected in the soil or groundwater beneath or adjacent to the unit above acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

6.19 SWMU NUMBER 30 -- RESIDUAL WASTE LANDFILL

6.19.1 Objectives

The objective of this investigation is to supplement the investigation of the HWM1 landfill, which is located within the perimeter of the residual waste landfill, to obtain data that specifically address the possible effects of the residual waste landfill on the environment.

6.19.2 Work Plan

6.19.2.1 Waste Characterization

In accordance with EPA's request, the following wastes will be characterized:

- Waste casting sands
- Process wastewater treatment sludges
- Canal sludge

Process wastewater treatment sludges will be characterized during the investigations set forth in Sections 6.1.2, 6.3.2, and 6.4.2. The canal sludge will be characterized during the investigation set forth in Section 6.21.2.3. If insufficient information is available to characterize the waste casting sands, four representative samples will be obtained, to be analyzed for parameters set forth in Table 6-2.

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Potential contaminants of concern identified in the waste characterization study will be added to the groundwater sampling parameter list for the residual waste landfill.

6.19.2.2 Groundwater Investigation

The monitoring network for the residual waste landfill consists of wells MW-1, MW-2, MW-3, and MW-4 (Figure 6-2).

As in the HWM1 landfill investigation, BSC will install additional monitoring wells in the area under consideration if there is evidence of pollutants migrating off-site in quantities of concern, as determined by risk analysis. These additional monitoring wells would assist in defining the three-dimensional flow regime as well as the vertical and horizontal extent of the plume. The number and location of the wells, and the sampling protocol would be determined after the decision to proceed with the second phase of the investigation.

The designated wells will be sampled three times, separated by two-month intervals, for the parameters identified in the National Drinking Water Standards plus the potential contaminants of concern identified in Section 6.19.2.2, if any. The sample collection, preservation, shipment, and testing protocol is described in the Quality Assurance Project Plan (Appendix D).

The groundwater investigation of HWM1, including water and stream sediment sampling, will be coordinated with the groundwater investigation of the residual waste landfill. The objective of the coordinated investigation will be to distinguish the separate influences that the HWM1 and the residual waste landfill may have on the groundwater system. The water quality in Laurel Run is addressed in the HWM1 Landfill investigation.

6.19.3 Conclusions

The data from the residual waste landfill investigation will be evaluated to determine if further work is necessary. No further investigation will be necessary if analysis indicates that concentrations of identified PCOCs present in the groundwater in the vicinity of the landfill are below acceptable levels, as determined by risk assessment. Total metal concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment.

Further investigation will be necessary if concentrations of PCOCs are above acceptable levels. A work plan will be developed to perform the required investigation.

6.20 SWMU NUMBERS 31 AND 32 -- CAUSTIC WASTE RINSEWATER TANKS

6.20.1 Constituent Sampling Plan

As requested by EPA, the MSDS sheets for the Oakite stripper will be reviewed for hazardous constituents. If total constituent analysis is not available, one sample of unused Oakite stripper will be obtained and analyzed for the parameters listed in Table 6-5.

Investigation of the caustic waste rinsewater tanks will be conducted in three sampling rounds, spaced at least two weeks apart. During each round, three samples of equal volume will be collected from each tank: one at the top, one at mid-depth and the third near the bottom. These samples will be composited to provide a representative sample. Samples will be preserved as appropriate and placed in clean, labeled jars. The samples will be cooled to 4°C for transport to the laboratory, where each sample will be analyzed for the parameters listed in Table 6-5.

If the concentrations of identified PCOCs in the wastewater in the SWMU are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment), the investigation will conclude. If, however, the concentrations are not below acceptable limits, the soil and groundwater investigation set forth in Section 6.20.2 will be implemented.

6.20.2 Soil Investigation

One boring or test pit will be placed adjacent to stained soil, if present, or on the downstream side of the containment structure. Subject to these limitations, the boring or test pit will be conducted as close to the caustic waste rinsewater tanks as safety and operating constraints will allow.

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6.20.3. Soil/Groundwater Sampling and Analysis

Non-dedicated split-spoon samplers (for borings) or stainless steel trowels (for test pits) will be employed to collect a series of soil samples at depths of 6", 12", 18" and 24" below the selected sampling locations. The borings or test pits will be logged by a geologist. In the description of soil samples, color will be noted first, followed by composition, Unified Soil Classification symbol (in parentheses), consistency, moisture, and characteristic features such as mineral/rock constituents, texture, fabric, and bedding. Soil samples will be collected in 8-ounce glass jars, and cooled to 4°C until analyzed. The collected samples will be analyzed for the parameters listed in Table 6-5. For each sampling location the samples collected at depths of 6" and 12" will be analyzed first. If these samples do not show levels of concern, as determined by risk analysis, then the samples collected at depths of 18" and 24" will not be analyzed.

If standing water is present in the boring or test pit, a water sample will be collected in addition to the soil samples to determine if there have been releases of PCOCs. The water sample will be collected, placed in 8-ounce plastic jars, acidified to a pH < 2, and cooled to 4°C until analyzed. The water sample will be analyzed for the parameters listed in Table 6-5.

6.20.4 Conclusions

The results of the SWMU investigation will be evaluated to determine if any further investigation will be necessary.

No further investigation will be necessary if:

The concentrations of identified PCOCs in the soil and/or groundwater adjacent to the unit are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment). If standing water is present in the boring or test pit, a water sample will be collected in addition to the soil samples to determine if there have been releases of PCOCs. The water sample will be collected, placed in 8-ounce plastic jars, acidified to a pH < 2, and cooled to 4°C until analyzed. The water sample will be analyzed for the parameters listed in Table 6-5.

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6.20.4 Conclusions

The results of the SWMU investigation will be evaluated to determine if any further investigation will be necessary.

No further investigation will be necessary if:

- The concentrations of identified PCOCs in the soil and/or groundwater adjacent to the unit are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

TABLE 6-5
CAUSTIC WASTE RINSEWATER TANKS
PARAMETERS FOR ANALYSIS

pH

Total Petroleum Hydrocarbons

Aromatic Volatiles

Lead

Aluminum

Arsenic

Cadmium

Chromium

Selenium

Zinc

Further investigation will be necessary if:

Identified PCOCs are detected in the soil or groundwater beneath or adjacent to the unit above acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment).

6.21 SWMU NUMBER 34 -- PLANT CANAL

6.21.1 Phase I - Objectives

The objectives of the phase I activities will be research of historical information, and characterization of the air above the canal, the surface water and the sediments by screening for the presence of PCOCs in order to make one of the following determinations:

- 1) The canal presents no potential risk to human health or the environment.
- 2) The concentrations of PCOCs in the canal sediments, canal water and/or the air above the canal present a potential risk to human health or the environment.
- 3) The data are inconclusive and further investigation is required.

6.21.2 Phase I - Workplan

6.21.2.1 Historical Research

Historical aerial photographs will be examined to identify possible sources of discharges, that is sewer outlets affecting the canal. Additionally, site records will be studied, and site personnel will be interviewed to collect information about past discharges into the canal.

6.21.2.2 Surface Water Sampling

Two sampling rounds will be conducted in which water samples will be collected at the inlet to and outlet from the canal, and in between at 1,500 foot intervals.

Water samples drawn from the canal at each location will be composited from grab samples collected at three hour intervals over a nine hour time period. One sampling round will be conducted during a time in which storm drainage is minimal and the other sampling round will occur immediately following a storm event. This will allow for estimation of transient water quality conditions within the canal as well as any effects of the City of Steelton's storm drainage on the quality of the canal. All water samples will be preserved as appropriate and placed in clean, labeled containers. The samples will be placed in iced coolers for transport to the laboratory where they will be analyzed for parameters listed in Table 6-1 to identify any potentially hazardous constituents present. Additionally, common ions will be analyzed to help in characterizing changes in water quality, identify sources, and aid in future transport calculations, if required.

6.21.2.3 Sediment Sampling

Sediment from the canal bottom will be collected at the same locations as the water samples during the non-storm sampling event. The sampling equipment will be decontaminated between sampling locations using soapy water, fresh water, acetone, and final distilled water rinse. The sediment samples will be placed in clean, airtight containers cooled to 4°C for transport to the laboratory, and analyzed for the parameters listed in Table 6-2. EP Toxicity extractions and analyses for EP metals will be performed on 10 percent of the samples to verify previous data that the sediments are not a characteristic hazardous waste material. Data obtained during the historical review regarding the most recent analyses of samples from dredged canal sediment/sludge will be included.

6.21.2.4 Air Investigation

If potentially volatile compounds are detected at elevated concentrations in water samples from the canal, it will be necessary to determine if those compounds are volatilizing at elevated concentrations. This will be accomplished by taking general air measurements using detector tubes (e.g., Dräger) appropriate for polynuclear aromatic hydrocarbons and volatile organic compounds found at the site. Measurements will be taken at locations where water had elevated concentrations. If OSHA air limits applicable to employees stationed at the canal are not exceeded, it

can be assumed off-site public health and the environment will not be significantly impacted.

6.21.2.5 Phase I Conclusions

No further investigation will be necessary if all of the following are true:

- The concentrations of identified PCOCs in the water or sediment are below acceptable limits, as determined by risk analysis (water concentrations below the National Drinking Water Standards will be considered acceptable without a risk assessment); and
- If performed, the results of the air investigation are within OSHA limits.

If concentrations of PCOCs in water, sediments or air are at a level at which there is potential for risk to human health or the environment, then transport mechanisms, concentrations and receptors need to be investigated for risk analysis.

If data is inconclusive, an investigation will be required to obtain more detailed data. The details of such an investigation will be dependent upon the data developed in Phase I. Results may call for a more intense investigation of a portion of the canal, pursuing the identity of sources of PCOCs and determining the migration potential (leaching models) of sediments. A plan will be developed in this phase based upon the data available, for implementation in Phase II.

6.21.3 Phase II

6.21.3.1 Phase II Implementation

If data developed in Phase I is inconclusive, Phase II will involve implementation of the plan discussed above, in 6.21.2.5.

6.21.3.2 Phase II Conclusions

No further investigation will be necessary if all of the following are true:

- The concentrations of identified PCOCs in the water or sediment are below acceptable limits, as determined by risk analysis (water concen-

trations below the National Drinking Water Standards will be considered acceptable without a risk assessment); and

. If performed, the results of the air investigation are within OSHA limits.

If concentrations of PCOCs in water, sediments or air are at a level at which there is potential for risk to human health or the environment, then transport mechanisms, concentrations and receptors need to be investigated for risk analysis.

6.21.4 Phase III

Phase III would encompass further investigation if identified PCOCs are detected at concentrations above acceptable limits (as determined by risk analysis) in the water or solids tested, and there is a potential risk to human health or the environment.

7.0 REPORTS

7.1 MONTHLY TECHNICAL PROGRESS REPORTS

Bethlehem Steel will submit monthly technical progress reports to U.S. EPA by the tenth day of each month. Progress reports will provide a summary of technical activities accomplished during the previous period, including technical problems encountered, corrective actions planned to rectify the problems, and any changes made in the project, as well as a summary of technical activities scheduled for the next period. Reports will also include administrative information, such as changes in personnel, copies of daily reports, inspection reports, or laboratory/monitoring data, and summaries of any contacts with community or state or local government representatives during the reporting period.

7.2 SUBMITTAL OF INTERIM AND FINAL REPORTS

Bethlehem will summarize findings into interim and final reports. Interim reports will be submitted to U.S. EPA at the completion of each of the following investigative activities:

Historical Information Review

Field Investigation

Groundwater Monitoring

Interim reports will provide a more detailed analysis of results and conclusions than the monthly progress reports.

The interim reports will be the basis of the draft report to be prepared upon completion of facility investigation activities. This report will characterize the site and summarize the data collected, including conclusions from all investigation areas. The report will include results, discussion of data evaluation findings, data analysis, site receptor assessment, and related quality assurance and quality control data.

The draft report will be submitted to U.S. EPA for review.

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